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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------|-------------|----------------------|---------------------|------------------|
| 10/683,835 | 10/09/2003 | Chung Hsien Hsin | 2011132 | 2706 |
| 7590 | 08/12/2004 | | EXAMINER | |
| PRO-TECHTOR INTERNATIONAL | | | IM, JUNGHWA M | |
| 20775 Norada Court | | | | |
| Saratoga, CA 95070-3018 | | | ART UNIT | PAPER NUMBER |
| | | | 2811 | |

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

| | | |
|---------------------------|-------------------|--|
| Application No. | HSIN, CHUNG HSIEN | |
| 10/683,835 | | |
| Examiner Junghwa M. Im | Art Unit 2811 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 09 October 2003.
2a) This action is FINAL. 2b) This action is non-final.
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-5 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1-5 is/are rejected.
7) Claim(s) _____ is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities.

Upper case letters are used instead of lower case letters in every indentation of the claim

1. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites a limitation of “the lower surface formed with a frame to cause a cavity formed between the frame and the substrate.” However, the Application does not show a frame on the lower surface of the substrate. The frame and the substrate are shown as the same layer.

Claims 2-5 are dependent on the rejected base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (US Pub. 2004/0090829), hereinafter Miura in view of Koh et al. (US 6737738), hereinafter Koh.

Regarding claim 1, insofar as understood, Fig. 36 of Miura shows a miniaturized small memory card to be set in an electric device, comprising:

a substrate (20) having an upper surface and a lower surface, the upper surface formed with a plurality of connected points, the lower surface formed with a frame (60; a case) to cause a cavity formed between the frame and the substrate, the cavity also formed with a plurality of connected points, which electrically connected to a plurality of fingers (4a; an external electrode terminal) of the frame, and the golden fingers are used to electrically connect to the electric device;

at least one upper memory chip (5, 6), which formed on the upper surface of the substrate, electrically connected to a plurality of connected points of the upper surface;

at least one lower memory chip, which formed in the cavity on the lower surface of the substrate, electrically connected to a plurality of connected points of the lower surface;

an upper glue layer (3) being encapsulated the upper surface of the substrate to cover at least one upper memory chip; and

a lower glue layer (3) being encapsulated the lower surface of the substrate to cover at least one lower memory chip.

Fig. 36 of Miura shows substantially the entire claimed structure except the fingers made of gold. Fig. 3 of Koh shows golden fingers (52; col. 1, lines 18-21) on the substrate.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Koh into the device of Miura in order to form golden fingers since gold exhibits higher conductivity. In addition, it is well known in the art that golden fingers are commonly used for a contact pad.

Regarding claims 2 and 3, Fig. 36 of Miura shows the upper (and lower) memory chips are electrically connected to the connected points of the corresponding surface of the substrate via a plurality of wires (6).

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura and Koh as applied to claim 1 above, and further in view of Kledzik et al. (US 6713854), hereinafter Kledzik.

Regarding claims 4 and 5, the combined teachings of Miura and Koh show substantially the entire claimed structure except the upper and the lower chips are connected through the golden balls to the substrate. Fig. 29 of Kledzik shows gold balls (2905) are used to connect the upper and lower chips (2902's) to the substrate (2901).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the teachings of Kledzik into the device of Miura and Koh in order to have the upper and lower chips connected through golden balls to the substrate for ball-grid array IC package, and gold is used for the balls for a better conductivity.

Note that Fig. 4 of Koh also shows the upper and lower chips (88's) are connected through balls (102's) to the substrate (82).

Note that "by coating manner" is a process designation, and would thus not carry patentable weight in this claim drawn to a product. See *In re Thorp*, 227 USPQ 964 (Fed. Cir. 1985).

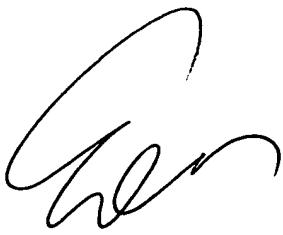
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Junghwa M. Im whose telephone number is (571) 272-1655. The examiner can normally be reached on MON.-FRI. 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmi



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SUPERVISORY PATENT EXAMINER
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